

Date: Friday, 9/14/2007 2:02:01 PM
 User: Kim Johnston

Process Sheet

Customer :	CU-DAR001 Dart Helicopters Services	Drawing Name :	CROSSTUBE EXTRUSION
Job Number :	34690		
Estimate Number :	10028		
P.O. Number :		Part Number :	D6006129
This Issue :	9/14/2007 S.O. No. :	Drawing Number :	D6006 REV A
Prsht Rev. :	NC	Project Number :	N/A
First Issue :	1/1 Type : LANDING GEAR	Drawing Revision :	A
Previous Run :	29112	Material :	
Written By :		Due Date :	1/30/2008 Qty: 16 Um: Each
Checked & Approved By :	<u>Handwritten signature</u>		
Comment :	Est Rev 04.06.15 Added tolerance to Step 2 KJ/JLM		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O: 4611

C 207/09/18 (16)

- a) Order as per Dwg D6006
- b) Material: 3.250 x 0.515 wall 7075-T6/T6511 (WW-T-7007 or QQ-A-225/9 or QQ-A-200/11) seamless aluminum tube
- c) Minimum ultimate tensile strength = 77 ksi
- d) Minimum tensile yield strength = 66 ksi
- e) Tolerance are per ASTM B210 (see details on Dwg D6006)
- f) Material certification required

2.0	D6006129P	Crosstube material
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Comment: Qty.: 1.0000 Each(s)/Unit Total: 16.0000 Each(s)
 Crosstube material

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1
 Receive & Inspect For Transit Damage
 Ensure material certification is attached

C 8/3/11 (13)

4.0	QC6	DIMENSIONAL CHECK
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Comment: DIMENSIONAL CHECK
 Ensure Material certification comply to Dwg D6006

C 08/03/11 (13)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ Date: 02/03/13

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 9/14/2007 2:02:01 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: CROSSTUBE EXTRUSION

Job Number: 34690

Part Number: D6006129

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

6.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

Handwritten: 08/03/13

7.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: LG

Handwritten: SL

Handwritten: 08.03.12

Handwritten: (13)

8.0

QC21

FINAL INSPECTION/W/O RELEASE



Handwritten: (13)

Comment: FINAL INSPECTION/W/O RELEASE

Handwritten: 08/03/13

Job Completion



Handwritten: 2008/3/13

Handwritten: (13)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

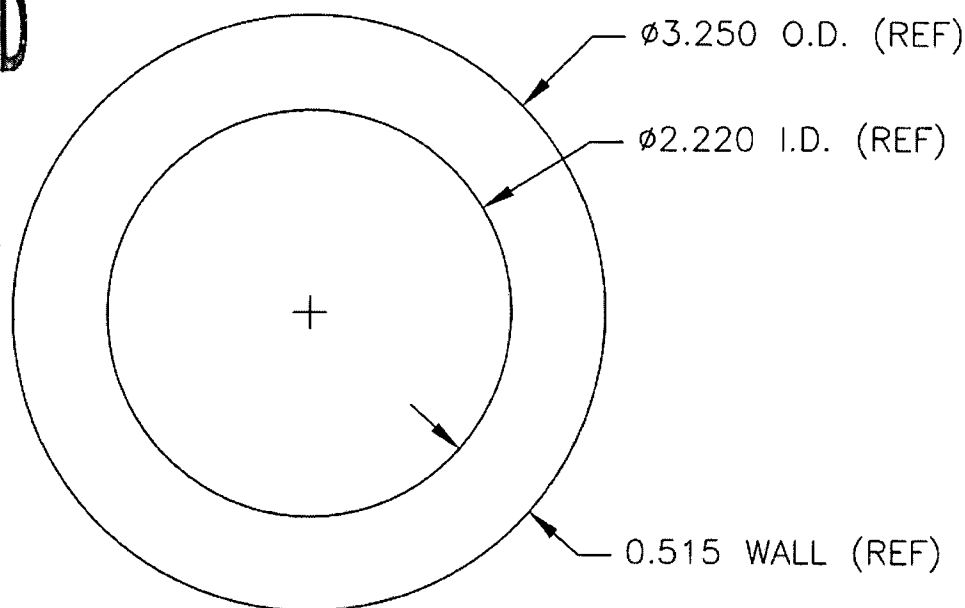
NOTE: Date & initial all entries



DESIGN CP	DRAWN BY CP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED A	APPROVED A	DRAWING NO. D6006	REV. A SHEET 1 OF 1
DATE 00.11.17	TITLE CROSSTUBE MATERIAL		SCALE 1:1
A	00.11.17	NEW ISSUE	

SPECIFICATION CONTROL DRAWING

RELEASED
00.11.24 A



NOTES

- 1) D6006-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 129" LONG TUBE: D6006-129

- 2) MATERIAL: 3.250 OD x 0.515 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:
O.D.: ± 0.008 MEAN (± 0.016 INCLUDING OVALITY)
WALL: ± 0.020 MEAN (± 0.052 INCLUDING ECCENTRICITY)
LENGTH: XXX $+0.188/-0.000$
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

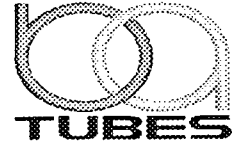
SHOP COPY
RETURN TO
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WORK ORDER
NO. 346490

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BA TUBES LTD

Studley Road, Redditch, Worcestershire, B98 7HN, England
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Facsimile: 0044 (0)1527 484501



CONCESSION REQUEST

Demande de dérogation / Konzessionsanfrage

N° 06/08

Product Details / Description produit

CUSTOMER / Client /Kunde	Dart
CUSTOMER ORDER NO. / No. cde/ Bestell nr.	PO00004611 D6006-129P
BA TUBES ORDER NO. / Ordre de fabrication/ AB	94945/5
TUBE DIMENSIONS / Dimensions /Dimensionen	D 3.250" x W .515" (D082.55 x W013.080)
SPECIFICATION / Normes / Spezifikation	QQA-A-200/11E
ALLOY / TEMPER: Alliage / Etat/ Legierung/Härtegrad	7075 T6
QUANTITY: Qté par la NC / Menge unter Konzession	9 lengths

Reason for Concession / Raison de notre demande / Grund für Konzession

Concession request due OD mean below tolerance
2 lengths indicating **3.239"/3.240"** (82.28/82.29mm.)
Remaining lengths indicate **3.241"** (82.33/82.32mm.)

DATE: 16.01.08

CELL: B Cell

RAISED BY/ Etabli par/Ausgeschrieben von: T M Layton

REQUESTED By/ Réclamé par/Angefordert von: T Ward

Customer Decision / Réponse client / Kundenentscheidung

YES	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>

COMPLETED BY / Renseigné par :/Unterschrift **CHRIS PROVENCHAL**

TITLE / Intitulé de poste :/ Titel **MECHANICAL DESIGNER**

DATE:/ Datum **08.01.18**

L Lacelle

From: David Shepherd [dshepherd@dartaero.com]
Sent: January 17, 2008 4:50 PM
To: 'Chris Provencal'
Cc: 'L Lacelle'; 'Murdoch, Jason'; 'Mike Petsche'
Subject: RE: PO 4611

Chris,

Thanks ... that's perfect.

Linda,

Looks like we're good to go.

If you need someone to sign that concession form from the vendor, please get Chris to do it based on this email.
Let me know if you need anything else.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Thursday, January 17, 2008 2:38 PM
To: 'David Shepherd'
Cc: 'L Lacelle'; 'Murdoch, Jason'; 'Mike Petsche'
Subject: RE: PO 4611

The tube is still acceptable.

Per SR-D212-664-1 Rev. A, the margins of safety for the existing tube in the affected area (unmachined top section) was:

0.11 Ult Bend, 0.12 Yield Bend, 0.13 Ult Tension, 0.14 Yield Tension.

With an OD of 3.239 the margins are:

0.10, 0.11, 0.12, 0.13

Which is still OK.

-Chris

From: David Shepherd [mailto:dshepherd@dartaero.com]
Sent: January 17, 2008 11:03 AM
To: 'Chris Provencal'
Cc: 'L Lacelle'; 'Murdoch, Jason'; 'Mike Petsche'
Subject: FW: PO 4611
Importance: High

Chris,

Can you run some numbers on this and get back to me with a recommendation.

18/01/2008

This is material for the 212 aft crosstubes.

The only sections that matter are between the supports because we turn the rest of it down, so the starting OD doesn't really matter outside of the supports
I'm pretty sure its going to be OK, but you're the numbers guy ...

Thanks,
David

From: L Lacelle [mailto:llacelle@dartaero.com]
Sent: Wednesday, January 16, 2008 8:06 AM
To: *David Shepherd (*David Shepherd); Jason Murdoch
Subject: FW: PO 4611
Importance: High

David? Jason? Is this acceptable?

LL

From: Lee Dykes [mailto:lee@batubesusa.com]
Sent: January 16, 2008 10:03 AM
To: Linda Lacelle
Cc: Lynna Beckerle
Subject: PO 4611

Hi Linda,

I tried to call, but understand you are in a meeting most of the morning. Please see the attached document which indicates some of the 3.25 OD tube is slightly under the OD specification.

Please let Lynna or me know how we should proceed. Sorry for this inconvenience.

Thanks, Lee

ALUNNA TUBES, Ltd
Formally - BA TUBES USA

lee@batubesusa.com
www.batubesusa.com

Office 205-970-0971 // Cell 205-601-9205

No virus found in this incoming message.

Checked by AVG Free Edition.

Version: 7.5.516 / Virus Database: 269.19.2/1224 - Release Date: 1/14/2008 5:39 PM

No virus found in this outgoing message.

Checked by AVG Free Edition.

Version: 7.5.516 / Virus Database: 269.19.5/1228 - Release Date: 1/16/2008 9:01 AM

No virus found in this incoming message.

Checked by AVG Free Edition.

18/01/2008



ALUnna Tubes Limited
Telephone 01527 484500 - Facsimile 01527 484501
www.alunnatubes.com

Approved Certificate According to EN10204:2004 3.1

For all Customer and 3rd Party approvals
visit www.alunnatubes.com

No. C/153943/1

Customer DART AEROSPACE LIMITED 1270 ABERDEEN STREET HAWKESBURY ONTARIO CANADA K6A 1K7	Your Order No PO00004611 Your Part No D6006-129P Our Order No 9494575 Packing Note No 153943 Date 31/01/08 Packages 1 CASE	Other Tests Passed
Size / Description SEAMLESS EXT TUBE 3.250 INS O/D .515 INS W/T 7075 Alloy Length - 129.02 inches	Specification 7075 T6 QQ-A-200/11E	

No of Pieces	Nett Weight Lbs		Tensile Test					Chemical Analysis %													H cc/ 100 gm
			Test No	0.2% Proof Stress KSI	Tensile Strength KSI	% Elongation 4 x Dia		Heat or Cast No	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Zr			Ti	
6	342		332040 LO	79.8	88.2	11		2N268	.07	.29	1.41	.03	2.39	.21	.01	5.79	.01			.03	.13
7	399		332041 LO	82.5	90.9	8		2N268	.07	.29	1.41	.03	2.39	.21	.01	5.79	.01			.03	.13

Remarks

ALLOY MELTED IN THE UNITED KINGDOM

Authorised Inspection Representative

Mr Terry Layton - For and on behalf of Alunna Tu

In accordance with the RoHS directive, ALunna Tubes certify that the above mentioned product does not contain banned or relevant substances.

Mercury Free.

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V.A.T. Registration No. GB 923 7112 44

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These results pertain only to the item(s) tested as samples by the client unless otherwise indicated.